Fluid highly conc. stable calcium and/ or magnesium hydroxide slurry - for producing micro-flakes and granules, obtd. by slaking oxide with aq. acid and adding polyanion

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Inventor(s): LANGELIN HENRI-RENE DR ING [FR] +

Applicant(s): LHOIST RECH & DEV SA [BE] +

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Abstract of **DE 4302539 (A1)**

Ca(OH)2 and/or Mg(OH)2 slurry (I) contg. over 60% dry substance contains an inorg. acid (poly)anion (II) and a polyanion (III) to give (I) a viscosity less than 1500, pref. 500-1500 cP. Also claimed are: (a) Ca(OH) 2 and/or Mg(OH)2 microflakes (IA) with a thickness less than 0.5, pref. less than 0.3 micron and parallel upper and lower sides with an area less than 200, pref. less than 100 micron 2; and (b) Ca(OH)2 and/or Mg (OH)2 granules or granulate (IB) in the form of a mixt. of (IA). (II) is pref. SO3-, SO4(2-) or Cl(-) and (III) is derived from a (co)polymer with anionic gps. of (meth)acrylic, vinylbenzylsulphonic or acrylamino-2-methylpropanesulphonic acid or salt or 2-sulphoethyl methacrylate or salt gps. opt. with (meth)acrylate ester(s) as comonomer. The concs. are 1-50, pref. 6-50, pref. 6-50, esp. 6-30 g/l (II) and 1-50, pref. 5-30 g/l (III). In (I), at least 20%, pref. at least 30% of the Ca(OH)2 particles have a grain size of over 100 microns and over 80% a grain size of over 20 microns. (I) contains less than 5, pref. less than 1% Mg(OH)2 w.r.t. Ca(OH)2+ Mg(OH)2. (IB) has an average grain size of over 20, pref. over 50 microns, with over 80% of the particles larger than 20 microns and esp. a grain size of over 100, partic. over 250 microns. (I) is prepd. by slaking CaO and/or MgO with an aq. soln. contg. (II) and adding (III) before, during or at the end of the slaking reaction. The reaction mixt. is stirred and kept below 30, pref. below 20 deg. C. Its viscosity is regulated, pref. by adding CaO to a viscosity of 300-1200 cP; or by slaking with aq. (II) soln. until the viscosity is 300-1200 cP, adding (III) to reduce the viscosity and then adding CaO and/or MgO to a viscosity of 300-1200 cP. (IA) are produced by sepg. the medium into a solid and liq. phase and opt. drying, milling and opt. drying the solid; and (IB) by sepg. the phases and opt. drying. ADVANTAGE - In spite of its very high solids content, (I) has good stability, i.e. high resistance to sedimentation, which facilitates transport and use.

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1. Lime and/or magnesium hydroxide slurry with a dry matter content of more than 60%, characterised in that it an anion or a polyanion of an inorganic acidic one and a polyanion contain, in order to preferably guarantee in the slurry a viscosity of less than 1500 cP, within the range of 500 to 1500 cP.

2. Slurry according to claim 1, characterised in that the anion or anion of the polyanion of an inorganic acidic one selected becomes from SO3< ->, SO4< => and Cl< ->.

3. Slurry according to claim 1 or 2, characterised in that it 1 to 50 g/l the anion or the anion of the polyanion of an inorganic acidic one contains.

4. Slurry according to claim 3, characterised in that it 6 to 50 g/l, preferably 6 to 30 g/l the anion or anion of the polyanion of the inorganic acidic ones contains.

5.Aufschlämmung after one of the claims 1 to 4, characterised in that the polyanion a polymer or a copolymer is, which contains anionic monomer units, which originate from monomers from the group comprising acrylic acid their salts, methacrylic acid and its salts, Vinylbenzylsulfonsäure and its salts, Acrylamino-2-methylpropansulfonsäure and its salts, 2-Sulfoethylmethacrylat and its salts.

6. Slurry according to claim 5, characterised in that it 1 to 50 g/l, preferably 5 to 30 g/l polyanion contains.

7. Slurry according to claim 6, characterised in that it an anion or a polyanion of an inorganic acidic one and a polyanion selected from the acrylic polymers and copolymers contains.

8.Aufschlämmung according to claim 7, characterised in that acrylic polymers and copolymers the selected are from the polyacrylates, polymethacrylates, copolymers of acrylic acid and methacrylic esters and their mixtures.

9. Slurry after one of the preceding claims, characterised in that at least 20%, preferably at least 30% of the calcium hydroxide particles a grain size of more than 100 mu m exhibit.

10. Slurry according to claim 9, characterised in that more as 80% of the calcium hydroxide particles a grain size of more than 20 mu m exhibit.

11. Slurry after one of the claims 1 to 8, characterised in that it micro lamellas from calcium hydroxide contains.

12.Aufschlämmung according to claim 11, characterised in that the micro lamellas a thickness of less as 0.5 mu m, preferably of less than 0.3 mu m exhibit.

13. Slurry according to claim 12, characterised in that the micro lamellas a lower outside and an upper outside exhibit, which run to each other parallel and that the surface of these sides amounts to less as 200 mu< m> 2, preferably less than 100 mu< m> 2.

14. Slurry after one of the preceding claims, characterised in that it less than 5 Gew. - %, preferably less than 1 Gew. - % magnesium hydroxide, related to which total weight of calcium hydroxide and magnesium hydroxide contains.

15.Verfahren to the production of a lime mixing into a paste with after one of the claims 1 to 10, characterised in that one calcium oxide and/or magnesium oxide with the help of an aqueous solution deletes, those at least an anion or a polyanion of an inorganic acidic one contains and that one the aqueous solution forwards, while or at the end of the reaction of the deletion a polyanion adds.

16.Verfahren according to claim 15, characterised in that one the calcium oxide and/or magnesium oxide with a solution deletes, those at least an anion, selected from SO3< ->, SO4< => and Cl< -> and/or a polyanion, contained SO3< ->, SO4< => and Cl< ->, contains and that one adds a polymer or a copolymer in the course of the reaction or at the end of the reaction, which anionic monomer units it contains, which came out from monomers, which the group, comprising acrylic acid and their salts, methacrylic acid and its salts, Vinylbenzylsulfonsäure and its salts, acryl revision modification NO 2-methylpropansulfonsäure and its salts and 2-Sulfoethylmethacrylat and its salts, belong.

17. Process according to claim 15 or 16, characterised in that one the calcium oxide with a solution deletes, the 1 to 50 g/l, preferably 6 to 30 g/l, SO4< => and/or Cl< -> contains.

18.Verfahren according to claim 16 or 17, characterised in that one in the course or at the end of the reaction a polyanion, selected from a polyacrylate or a polymethacrylate or copolymers of acrylic acid and methacrylic esters or a mixture from these adds in such a way that the concentration is because of polyanion, selected from a polyacrylate or a polymethacrylate or a Copolym of acrylic acid and methacrylic esters or a mixture from these within the range of 1 to 50 g/l, preferably within the range of 5 to 30 g/l.

19. Process according to one of claims 15 to 18, characterised in that one the reaction mixture agitates and the temperature of the reaction mixture below 30 DEG C, preferably below 20 DEG C, holds.

20. Process according to one of claims 15 to 19, characterised in that one the viscosity of the reaction medium regulates.

21 Verfahren according to claim 20, characterised in that one the solution calcium oxide adds, up to a viscosity within the range of 300 to 1200 cP.

22. Process according to claim 20, characterised in that one calcium oxide and/or magnesium oxide with an aqueous solution, those at least an anion of an inorganic acidic one, in particular SO4< => and Cl< -> or a polyanion of an inorganic acidic one, contains, deletes, until the reaction mixture exhibits a viscosity within the range of 300 to 1200 cP and that one then the mixture an acrylic polymer or - copolymer, preferably selected from a polyacrylate or a polymethacrylate or a copolymer from acrylic acid and methacrylic esters or a mixture from these adds, around the viscosity to decrease and that one adds then still calcium oxide and/or magnesium oxide to the mixture, until one receives a viscosity within the range of 300 to 1200 cP.

23. Process according to one of claims 15 to 22, characterised in that one calcium oxide with a solution deletes, which at least an anion of an inorganic acidic one, preferably a polyanion of an inorganic acidic one and an acrylic polymer and/or - copolymer contains.

24. Micro lamella of calcium hydroxide and/or magnesium hydroxide with a thickness of less as 0.5 mu m, preferably of less than 0.3 mu m, which exhibit a lower and an upper side, which run to each other parallel, whereby the surface of these sides amounts to less as 200 mu< m> 2, preferably less than 100 mu< m> 2.

25. Method, which can become the production of micro lamella according to claim 24 applied, with which one after one of the claims 1 to 10 manufactures a slurry, characterised in that one the medium of a phase separation subjects, with which one receives a Feststoffphase and a liquid phase that one dries the Feststoffphase if necessary that one grinds the Feststoffphase and that one dries the milled Feststoffphase if necessary.

26 Grain or granulates of calcium hydroxide and/or magnesium hydroxide in form of a mixture of micro lamella according to claim 24

27. Grain or granulates according to claim 26, characterised in that it a mean grain size of more as 20 mu m, preferably of more than 50 mu m, exhibits.

28 Grain or granulates according to claim 27, characterised in that more as 80% of the particles a grain size of more than 20 mu m exhibit.

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29. Grain or granulates according to claim 27, characterised in that it a grain size of more as 100, preferably of more than 250 mu m, exhibits.

30. Method to the production of grains or granulates after one of the claims 26 to 29, characterised in that one a slurry after one of the claims 1 to 10 manufactures and the medium of a phase separation and if necessary a drying process subjects.

Result Page

The invention relates to a lime and/or a magnesiumhydroxid slurry with a dry matter content of more than 60%.

It is known, lime and/or magnesium hydroxide slurries by reaction of CaO, MgO, to manufacture CaO MgO with water or by mixing calcium hydroxide and/or magnesium hydroxide in an aqueous medium.

With the production of lime milk and/or. a lime mixing into a paste with by reaction of ungelöschtem and/or. fired lime with water is very small the mean particle size of the calcium hydroxide particles, so that that content at calcium hydroxide particles in the slurry less than 20 to 30 Gew. - must % amounted to, so that a sufficient flowability or a sufficient pump ability of the slurry is ensured.

In order to increase this content up to 50%, becomes in the EP-A 03 13 483 the use polymers and/or copolymers from at least ethylenic mono carbonic acid monomers a recommended.

It is also known that with increase of the particle size of the calcium hydroxide particles the specific surface area of these particles decreases and that one can reduce the viscosity of the lime mixing into a paste with by increasing the diameter of the calcium hydroxide particles or increase also with a pre-determined viscosity the dry matter content of the slurry.

In order to increase and reduce thus the viscosity of the lime mixing into a paste with the particle size from approx. (OH) 2 to, already became in the US-PS 44 64 353 proposed, fired lime in an aqueous medium in the presence from 0,5 to 5 Gew. - % calcium sulphate to delete related to the weight of the fired lime, which is to become cleared. After this document the fired lime becomes cleared, until the temperature of the reaction medium amounts to about 85 DEG C.

Experiments have shown that in accordance with such methods obtained lime mixing into a paste with can exhibit a dry matter content in the order of magnitude of maximum 40-45%.

As on side 335 of "Chemistry and Technology OF Lime and Limestone" indicated, becomes by use of water, which contains SO2, for the deletion of fired lime the hydration speed of the lime reduced and the formation of large and/or. thick particles favored, which rapid sedimentieren. Lime mixing into a paste with, which by deletion of fired lime in presence of CaSO4 prepared are, point a relative stability due to this rapid sedimentation only and/or. Resistance in the time up.

The instant invention has to the object to repair these disadvantages. It concerns therefore a lime and/or a magnesium hydroxide slurry with a dry matter content of more than 60 Gew. - %, whereby this slurry is however time-stable, D. h. that with the help of this slurry the problem of the sedimentation of particle avoided and/or. prevented becomes. The Erfindu concerns therefore a lime and/or a magnesiumhydroxid slurry, the one viscosity of less as 20 P and a dry matter content of more than 60 Gew. - % exhibits.

Such a slurry can by deletion of CaO, MgO, CaO MgO, preferably of CaO, with water in presence of an anion of an inorganic acidic one, in particular of SO4< => and Cl< -> and in presence of a polyanion obtained become.

In accordance with a particular feature the slurry according to invention contains at least an anion or a polyanion of an inorganic acidic one, above all a strong acidic one and a favourable-white acidic one, which from sulphuric acid, more sulfurously acidic one, hydrochloric acid selected is, as well as at least a polyanion.

The anion of the inorganic acidic ones, favourable-proves SO3< ->, SO4< =>, Cl< -> or a mixture from these is, is in the lime mixing into a paste with in a concentration present, which favourable-proves g/l, 6 to 50 to general 1 to 50 g/l and preferably g/l constitutes 6 to 30.

Favourable way originates this anion from a calcium or a magnesium salt of an inorganic acidic one, in particular from CaCl2, MgCl2, CaSO4 (preferably in the form of CaSO4.1/2 H2O), MgSO4 (preferably in the form of MgSO4.7H2O) and its mixtures.

With a particular embodiment of the slurry according to invention in these present polyanion is favourable-proves a polyanion, which contains other anions than inorganic Säureanio and or a Copolymeres a polymere in particular, which contains anionic monomer units, which come from monomers of the subsequent group: Acrylic acid and their salts, methacrylic acid and its salts, Vinylbenzolsulfonsäure and its salts, 2-Acrylamino-2-methylpropansulfonsäure and its salts, 2-Sulfoethylmethacrylat and its salts. The concentration of this polyanion in the slurry amounts to for example 1 to 50 g/l, however preferably 10 to 30 g/l.

Prefered polyanions are acrylic polymers or - copolymers, in particular the polyacrylates, polymethacrylates, copolymers from acrylic acid ester and methacrylic ester as well as their mixtures.

Slurries after the invention know a viscosity in their embodiments within the range of 500 cP (0.5 Pa.s) and 1500 cP (1.5 Pa.s) as well as a dry matter content of more than 60 Gew. - % exhibit.

In accordance with another feature of the slurries according to invention they contain a substantial portion at thick Teilc such as particles with a grain size above 100 mu M. Thus the slurry contains calcium hydroxide and/or magnesium hydroxide particles of considerable grain size after the invention in its embodiments. The slurries after the invention are characterised by good stability or high resistance opposite the sedimentation, which their transport and their use and/or. Its use facilitated.

At least 20%, preferably at least 30% of the calcium hydroxide particles a grain size have favourable way and/or. a diameter over 100 mu M. In accordance with a particular feature of such lime mixing into a paste with more than 80% of the calcium hydroxide particles exhibit a grain size above 20 mu m.

The slurry according to invention is in an embodiment a slurry, which contains essentially only approx. (OH) 2. Thus a corresponding particularity contains the slurry less than 5 thread of this embodiment. - %, preferably less than 1 Gew. - % and even about only 0 Gew. - % magnesium hydroxide, related to the total weight at calcium hydroxide and Magnesiumhydrox

The invention relates to likewise a method to the production of a lime and/or a magnesium hydroxide slurry, in particular a slurry, the one dry matter content of more than 50 thread. - cP (1.5 Pa.s). D exhibits % and a viscosity of less than 1500. h. a lime mixing into a paste with after the invention.

The corresponding invention process becomes calcium oxide and/or magnesium oxide with at least an aqueous solution cleared, which contains at least an anion or a polyanion of an inorganic acidic one, favourable-proves to a strong inorganic acidic one and in particular SO3< ->, SO4< =>, Cl< -> or a mixture of these and/or a polyanion, the SO3< -> or SO4< => or Cl< -> or their mixture contains; one gives a polyanion to the aqueous solution, during or at the end of the reaction of the deletion of the calcium oxide and/or magnesium oxide.

Favourable way becomes in the course or at the end of the reaction a polyanion added, which contains other anions than inorganic acidic anions, in particular a polymer or a copolymer, which covers anionic monomer units, which come from monomers, which belong to the group existing from acrylic acid and their salts, methacrylic acid and their salts, 2-Acrylamino-2-methylpropansulfonsäure and its salts, 2-Sulfoethylmethacrylat and its salts.

The reaction of the deletion of CaO, MgO or one of their mixtures becomes favourable-proves with the help of a solution made, 1 to 50 g/l, preferably 6 to 50 g/l and in particular 6 to 30 g/l SO4< => and/or Cl< -> contains.

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With this delete reaction the reaction medium becomes maintained in movement and the temperature of the medium with below 30 DEG C, preferably with 20 DEG C.

Favourable way becomes the reaction of the deletion by fairs of the viscosity of the reaction medium controlled and/or. controlled. For example one adds calcium oxide and/or magnesium oxide of the solution, until a viscosity is within the range of 300 to 1200 cP (0.3 to 1.2 Pa.s) achieved.

In accordance with an embodiment of the invention process calcium oxide and/or magnesium oxide with an aqueous solution cleared, those at least an anion of an inorganic acidic one, become in particular SO4< = > and Cl< -> or a polyanion of an inorganic acidic one contains, until the reaction mixture exhibits a viscosity within the range of 300 to 1200 cP; then the mixture an acrylic polymer or copolymer becomes added, preferably selected from a polyacrylate or a polymethacrylate or copolymers from acrylic acid and methacrylic esters or a mixture from these, so that the viscosity mentioned becomes reduced; then will still calcium oxide and/or magnesium oxide to the mixture added, in order to delete this, until one receives a viscosity within the range of 300 to 1200 cP.

In accordance with a particular embodiment the calcium oxide becomes cleared, which contains at least an anion, with the help of an aqueous solution, preferably a polyanion as well as an acrylic polymer and/or copolymer of an inorganic acidic one.

The slurry of lime and/or magnesium hydroxide, which for example in that managing described manner prepared is, can be subjected then to a phase separation (for example a filtration), around a Feststoffphase (those the particles contains) and a liquid phase to obtained.

The Feststoffphase, which favourable-proves dried becomes, will then milled, in order to form micro lamellas, in particular from calcium hydroxide. These micro lamellas can if required, dried become.

After renewed mixing of these micro lamellas with water a slurry of lime and/or magnesium hydroxide can become obtained, which contain altogether micro lamellas of calcium hydroxide and/or magnesium hydroxide.

The invention relates to therefore also a slurry, which micro lamella of calcium and/or magnesium hydroxide contains.

Such micro lamellas point favourable-prove a thickness and/or. Up and parallel under and tops can exhibit starch of less as 0.5 mu m, preferably of less than 0.3 mu m to each other with embodiments, whereby the surface of these (both) sides less as 200 mu m< 2>, preferably less than 100 mu m< 2> amounts to.

The invention relates to likewise micro lamellas of calcium and/or magnesium hydroxide, which favourable-prove a thickness of less than 0.5 mu m (preferably less than 0.3 mu m) as well as exhibit a lower outside and upper Aussenseit to each other parallel lie, whereby the surface of these sides and/or. Surfaces less as 200 mu m< 2>, preferably less than 100 mu m< 2> amounts to.

If one if necessary subjects the reaction mixture only to a phase separation, for example a filtration, and a drying process, one receives grains or particles from approx. (OH) 2 in the form of micro lamellas in a thickness from less as 0.5 mu m, preferably from less than 0.3 mu M. These micro lamellas preferably exhibit a lower outside and an upper Aussense, which run to each other parallel, whereby the surface of these sides less as 200 mu m< 2>, preferably less than 100 mu m< 2> amounts to.

In accordance with an embodiment such grains point and/or. such a granulates exhibits a mean grain size of more as 20 mu m, preferably from more than 50 mu m. Preferably the grain size of more than 80% of the particles or grains lies above 20 mu M.

Particularly favourable grains or granulates are those with a grain size of more as 100 mu m, preferably from more than 250 mu M.

These grains and/or. Granulates after the invention possess large pores (for example from 30 to 35 mu m), so that it favourable-proves used the capture of thick particles becomes.

Other details and features of the invention come out from the ensuing description, becomes taken in which on the production examples as well as on the appended designs respect.

In the designs shows

Fig. 1 a schematic view of a plant, which can become the production of a slurry used after the invention; and

Fig. 2 and 3 views and/or. Uptakes of a calcium hydroxide grain after the invention.

The plant used to the production of the slurry after the invention 1, provided with a cooling jacket 11 covers a vat and an agitator 12 (preferably of the type anchor agitator). The calcium and/or magnesium oxide or the calcium and/or magnesium hydroxide 2 filled become and the vat 1 over an endless snail 3 supplied into an hopper. The rate of the agitator amounts to for example 200 to 600 UpM.

Waters, the anion of an inorganic acidic one and the polyanion become in each case the vat 1 over the lines 41 and/or. 42 and/or. 43 supplied.

The vat 1 exhibits a discharge line 5 for the developed lime and/or magnesium hydroxide slurry at its bottom.

Favourable way is the vat 1 also with an apparatus 6 for measuring the viscosity provided, which is 7 connected to a control system, which affects the motor 8, which propels the endless snail 3. This system 7 possible then, the rate of addition of Cao, MgO, to steer 2 and/or mg (OH) 2 approx. (OH) around the predetermined viscosity level to obtained, D. h. over at the end of the operation a product with a pre-determined viscosity to obtained.

A temperature sensor 9 is 1 connected to a control system 10 of an inlet valve 21 for a cooling fluid into the jacket 11 of the vat. In this way ensured can become that the temperature of the mixture contained in the vat does not exceed a predetermined temperature, for example 40 DEG C, preferably 30 DEG C.

Production examples

Example 1

To an aqueous solution, the 10 g/l CaSO4. H2O contained, became calcium oxide given. During the exothermic hydration reaction the temperature of the medium became maintained with approximately 30 DEG C. This hydration reaction became bottom agitations (rotational speed 400 UpM) performed.

The calcium sulphate present in the solution restrained the hydration reaction, D. h. the reduced hydration speed and possible thus a better discharge of the warm ones set free with the reaction.

As soon as the viscosity of the reaction mixture amounted to 800 cP, sodium polyacrylate in an amount became corresponding 1% of the desired weight of calcium hydroxide in the lime mixing into a paste with added. After this addition the white agitated mixture a viscosity of 300 cP (0.3 Pa.s) up. Then other calcium oxides the mixture given became, until the viscosity amounted to about 800 cP. During the hydration reaction of the calcium oxide the temperature of the reaction medium became maintained with approximately 30 DEG C.

In this way prepared slurry a white concentration at approx. (OH) 2 of approximately 65% up.

Example 2

Example 1 became repeated with the modification that first a solution became contained 10 g/l CaSO4.1/2 H2O and 6 g/l sodium polyacrylate prepared and then the ungelöschte lime with the help of this solution cleared, until one received a viscosity from 800 cP. Those in this way obtained slurry a white concentration at approx. (OH) 2 of approximately 65-70 Gew. - % up.

By filtration 2-Teilchen became recovered, like it in the Fig from this slurry approx. (OH). 2 and 3 shown is. These particles shown itself in form of a whole one or a mixture of micro lamellas. The thickness of these micro lamellas lay in the order of magnitude from 0,1 to 0.2 mu M. These micro lamellas exhibited a lower outside and an upper outside, which ran to each other parallel. The surface of these sides amounted to e 25 to 50 mu m< 2>.

In the subsequent table the grain size distributions of the lime mixing into a paste with and a slurry of the classical type, prepared in this example, are, D. h. to the state of the art, listed.

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Table
EMI11.1

As the table shows, the slurry according to invention of this example is characterized by the presence of particles or grains with a mean grain size from far over 20 mu m (around approximately 50 mu m more). Actual wise more than 80 Gew. - % of the particles a grain size of over 20 mu m up. A considerable number of the particles exhibits a grain size of more than 250 mu m.

Example 3

Example 1 became repeated with the modification that a solution, the 20 g/l MgSO4. 7 H2O in place of a solution, the 10 g/l CaSO4. 1/2 H2O contained, used became. In this way a lime mixing into a paste with prepared could become, those about 65 Gew. - Contained % approx. (OH) 2.

Despite the presence of a considerable amount of grains with a grain size over 200 mu m found became that such lime mixing into a paste with exhibited an excellent stability of more than 24 hours without agitation as well as of more than 15 days with light agitation (100 UpM).

In the subsequent table the values for the viscosity of the lime mixing into a paste with in a vat are and bottom light agitation listed.
<tb>< TABLE> Columns= 2>
<tb> Head Col 1: Residence time (days)
<tb> Head Col 2: Viscosity (cP)
<tb> 1< September> 315
<tb> 2< September> 310
<tb> 3< September> 320
<tb> 4< September> 315
<tb> 5< September> 307
<tb> 6< September> 315
<tb>< /TABLE>

Such lime mixing into a paste with can become thanks of its stability light in tank cars transported and from this discharged.

Example 4

Example 2 became repeated with the modification that the temperature of the medium and/or. Mixture with a temperature below 40 DEG C maintained did not become.

In the subsequent table the temperatures of the medium are listed after addition of 150 g CaO in 600 ml an aqueous solution, which contained CaSO4 as well as sodium polycarbonate if necessary.
EMI13.1

This example shows that it is not possible, a approx. (OH) 2 granulates according to the invention in absence of a polyanion (sodium polycarbonate) to manufacture, the CaSO4 however possible to lower the hydration speed (ungelöschten) of the lime and thus the rate of the release of warm ones with this reaction.

Other examples for the invention process became performed. In these examples used became:

CaCl2, MgCl2 as substances, an anion of an inorganic acidic one release,
Sodium and/or ammonium salts of a polycarboxylic acid as well as mixed salts of polymere acrylic acid as substances, the one polyanion release and MgO as well as CaO. MgO as starting materials, which should become cleared, for the production of the slurry.

These examples have shown that it was possible with use of these cloths, slurries with high concentration at dry matter (60 to 70%) and with a viscosity of less than 1000 cP (1 Pa.s) to obtained.

The lime mixing into a paste with according to invention becomes above all thanks of the form and the size of its particles (micro lamella, macropores, considerable grain size, small content at water (25 to 30%)) with advantage for the treatment of industrial wastes used, for example of industrial wastes (liquid or gaseous), of wastes, the heavy metals contain etc.

The granulates according to invention, in particular the part of it with a grain size over 200 mu m will/will favourable-proves used, in order to manufacture filter beds. Such grains or granulates point a small specific surface area (9 m< 2> /g opposite 20 to 25 m< 2> /g for approx. (OH) 2 of a known slurry) up, but macropores or cages from 20 to 50 mu M.

Finally obtained became by filtration and drying, a mixture from micro lamellas approx. (OH) 2 obtained by milled ones of the granulates of a lime mixing into a paste with. Such micro lamellas become due to their small thickness (0.2 to 0.3 mu m and because of their surface (25 to 30 mu m< 2>) favourable-proves with the production of films and foils from plastic materials, cellulosischen materials (paper, ...) etc. used. Such micro lamellas work as flaming timers.

The viscosity values indicated in the description are values after Brookfield, certain with the needle No. 3 and with a rotational speed of 60 UpM.